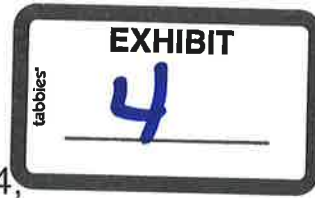


JUL 12 2024

7/9/24

Hello,

Community Development



My name is Rob Carter, owner of Lot 14 of Cimarron Hills, property address 6404 SE Riverdance rd, Prineville OR 97754, located next to Lot 15. We purchased this home over 2.5 years ago to enjoy quiet country living. I currently live and work from home.

I'm writing today to absolutely disagree with the application to expand the Greenbar Excavation rock pit. Our neighborhood CC&Rs clearly state the property should not be used for activities that disturb the neighborhood.

Cimarron Hills Phase 2 CC&Rs

Section 1 states: No lot shall be used except for single family residential purposes.

Section 8 states: No obnoxious, noxious or offensive activities shall be carried on upon any lot, nor shall anything be done thereon which may reasonably become an annoyance or nuisance to other property owners in the subdivision.

Section 13 states: No part of the property shall be used for the purpose of exploring for, taking thereof or producing therefrom gas, oil or other hydrocarbon substances.

Section 20 states: It is the intent of these covenants to preserve the natural vegetation of Cimarron Hills estates phase II.

Section 22 states: No part of any lot shall be used in a manner that materially or adversely affects the value of the adjoining or adjacent lots for residential purposes or the neighborhood wherein the lots are situated.

Section 24 states: The foregoing protective covenants, conditions, and restrictions shall run with the land and be binding on all the parties.

Section 26 states: The lot owners or any mortgagee on any lot shall have the right to enforce all of the CC&Rs.

quiet retirement. A rock pit next door would be a nuisance and eye sore.

Rocks are plentiful in central Oregon, please find another place for this rock pit. Rock pits don't belong in neighborhoods.

If the above is not reason enough to reject this application, would you please delay a decision until the Cimarron Hills neighborhood has more time to discuss and create a homeowners association to preserve our rights? Our neighborhood will be signing a letter of protest to this application and will be at the public hearing scheduled July 24th 2024.

Rob and Brenda Carter
6404 SE Riverdance rd
Prineville Oregon 97754



In The News Heat-related deaths Tips for staying cool Oregon's First Lady Deschutes Co. landfill Summer school programs NW Natural miss

Crook County residents fear mining company polluted their water. Here's how Oregon investigated

Exhibit 1



By Emily Cureton Cook (OPB)
June 13, 2023 6 a.m.

Federal lawmakers are pushing back on the way a state agency handled complaints about a mining giant.



Don Porfily sits in the dining room of his Crook County farmhouse with a sample of his tap water on May 1, 2023.

Emily Cureton Cook / OPB

0:00 / 5:28

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Don Porfily first noticed the change in his tap water last March. Out of nowhere, it tasted bad, “like mud,” said the 84-year-old feed store owner.

He stopped drinking it. Then, the plumbing in his Central Oregon farmhouse went haywire. Spigots lost pressure. The washing machine broke and so did the fridge and the water heater. When Porfily lifted the lid of a toilet tank, he found a layer of thick black sludge.

He’s lived in the house for 26 years and has never seen anything like this.

His neighbors also grappled with mysterious calamities. Down the road at Ashley McCormick’s house, they went through three dishwashers in a year. At Billie Johnson’s dairy, a record number of calves had been born dead. Same story at Bryan Zednik’s place.

Now, at least a dozen residents in this agricultural valley near Prineville are worried about the safety of their only drinking water supply, which is pumped from the ground.

“A neighbor will tell a neighbor, and they’ll call and say, ‘You better come look: black in the toilet, taste in the water,’” Porfily said.

He and others lay blame on a multi-billion-dollar construction materials company.



A view of the rock washing machine at Knife River’s Woodward pit on April 12, 2023.
Emily Cureton Cook / OPB

In 2016, Knife River Corporation leased 100 acres in the valley and started digging for rocks.

The company denies its sand and gravel pit is hurting the groundwater. It’s a titan in developing the West, with tens of millions in state contracts to build roads and bridges. Near McCormick and Byrd’s houses, it harvests materials used to make concrete. Knife River is nearly finished at the site but has plans to open a new mine nearby.

Neighbors are outraged against this. Some say they’ve already witnessed broken promises from the company, all while state regulators

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Neighbors feel the lack of oversight has effectively shifted the burden of proof from a huge corporation to a gaggle of local residents, a troubling dynamic that is now getting the attention of federal lawmakers.

A giant washing machine

People living near the mining operation, known as the Woodward pit, launched their own investigation last fall.

Porfily and others paid to have tap water samples analyzed at a lab. Results from a dozen homes near the mine show varying levels of manganese.

Depending on the concentration, this metal can cause a range of problems, from stained laundry to liver issues and neurological dysfunction.

In some wells, like Porfily's and McCormick's, the manganese levels were well above federal health advisory limits.

Knife River and state officials have said the element was there all along, a common geologic side effect of the volcanic eruptions that shaped the region. But residents and their advocates argue mining released previously undisturbed contaminants.

On a recent site tour, a leader from Knife River compared its operation to a giant washing machine.



Knife River VP South Central Division Chris Doan tours the Woodward pit on April 12, 2023.
Emily Cureton Cook / OPB

“We mine material from the field, and then we introduce it into this wash plant,” said South Central Division Vice President Chris Doan.

The wash plant scours dirt from the rocks so they can be sorted and shipped out to the company’s concrete mix plants, Doan explained.

“It goes into home foundations, slabs for buildings,” he said, “It goes into building roads and highways.”

The Woodward pit is one of the company's 51 mining permits in Oregon. Over the last decade, the company has been awarded nearly \$57 million in state contracts, mostly through the Oregon Department of Transportation. Its footprint spans 14 states in all, with a reported \$2.2 billion in annual revenue.

'A mine in the middle'

Oregon regulators are now considering whether Knife River can expand in Crook County, population of 26,000.

If it's permitted, the new pit would share ground with a determined opponent.

Dick Zimmerlee is a farmer who leases land inside the expansion area. He can see the existing mine from his house, and for the last two years has spent a lot of time and money trying to stop it from growing.



Farmer Dick Zimmerlee drives around the valley in Crook County, Oregon where he grew up. He decided to retire there and share ground with a Knife River sand and gravel mine, but now he's staunchly opposed to the company, and believes its processes tainted the groundwater. April 6, 2023, Emily Cureton Cook / OPB

"It just chapped my backside that the Goliath could get away with running over everybody else," Zimmerlee said.

At first, he was worried about the amount of water the company was allowed to take to run its rock washing machine.

"Now, that's really the least of our problems," Zimmerlee said.

He believes the land Knife River has already mined isn't fertile for farming anymore, even though the company said it replaces any

STORYMINDER
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underground. Zimmerlee contends this caused drainage problems in his fields. He began to file numerous complaints with state regulators in 2021. Knife River has denied his allegations. In 2022, Zimmerlee too, found a black toilet tank.

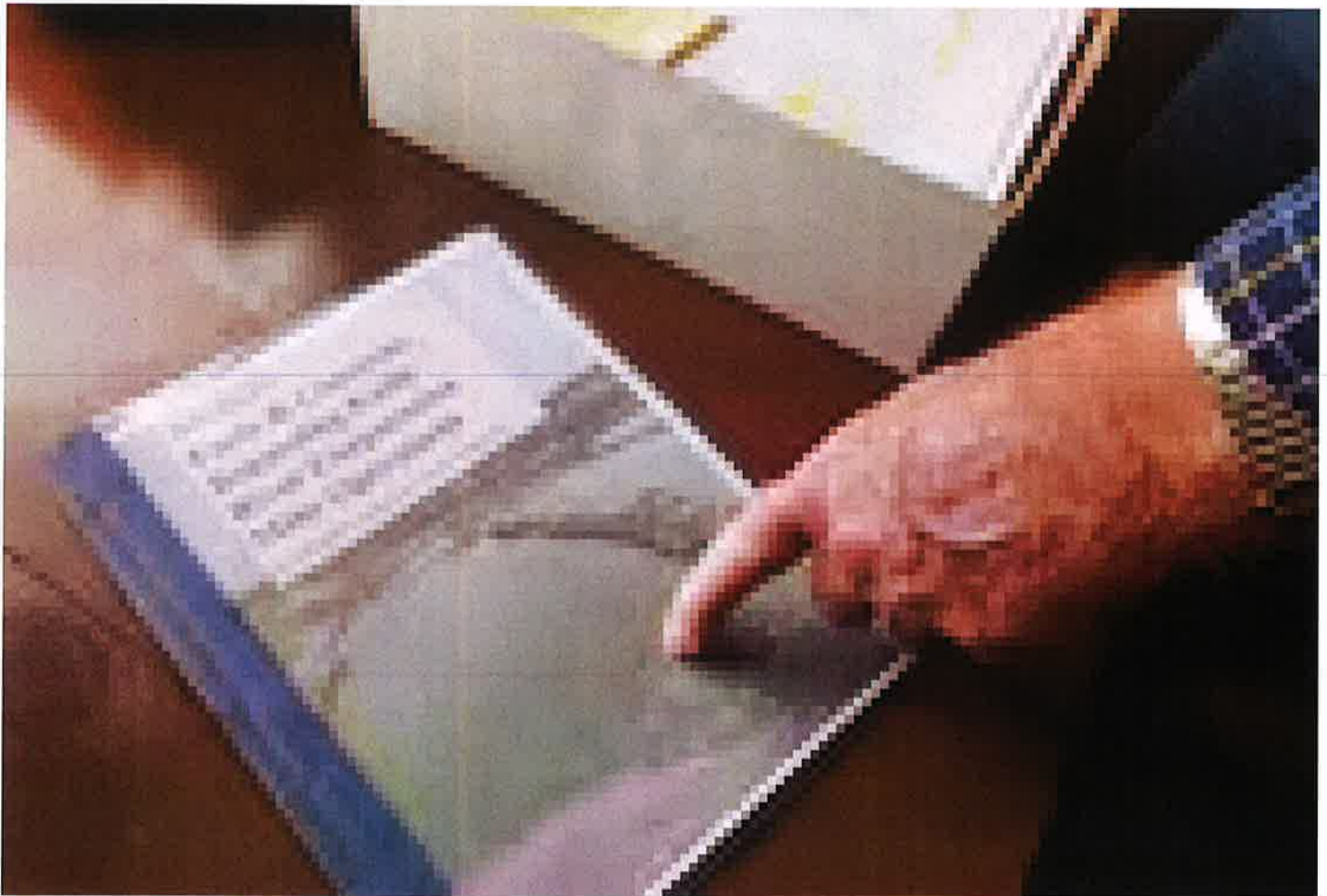
He hired a hydrogeologist to assess the situation.

Jim Newton runs an engineering consulting firm out of Bend. He said until this site he's always worked for mining companies, not opposing them.

"I've never worked for NIMBYs, to put it bluntly," Newton said.

This year, he drove to find 30 domestic wells in the immediate area of the Woodward pit, noting their GPS coordinates. He reviewed about a dozen available water test results. Then, Newton laid the data out on a map. He found a pattern in which homes have higher manganese concentrations.

"What's different from one side of the map to the other side of the map? There's a mine in the middle," he said.



Farmer and retired agricultural business consultant Dick Zimmerlee points to a dossier he created in opposition to Knife River's plans for an expansion near Zimmerlee's home in Crook County, Oregon, April 6, 2023.

Emily Cureton Cook / OPB

Newton theorizes that miners removed the earth's filtration system: the sand and gravel beneath the topsoil. Pre-mining, anything on the surface would have to percolate through that natural filter. If you take out those layers, Newton said, the groundwater becomes more vulnerable.

"All of a sudden that layer above the aquifer is very thin and more permeable, you don't have that advantage of additional material to filter out things like fertilizers, or really anything that hits the surface of the ground," according to Newton.

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State permits limited the mining depth at the Woodward pit to 20 feet below the surface, and according to Knife River's planning documents, groundwater flooded the pit well above that, in some places at just 7 feet below ground. At its proposed expansion, the company expects to hit even more water.

Digging in the water table agitated manganese that had long been suspended as a solid in the ground, Newton said. The mining allowed it to dissolve in the aquifer. Picture dropping a lump of sugar into a glass of water, he said.

"You can see the crystals. There they are. Then, you give it a good stir and they're gone. You can still taste the difference."

Debate over manganese risks

Manganese is one of the most abundant elements on Earth, and an essential nutrient in food. But, too much of it can be toxic.

In [2011](#) and [2014](#), studies found exposure to manganese in drinking water was associated with poorer memory, attention and motor skills in children. In [2020](#), researchers drew a link between exposure during childhood and attention-deficit hyperactivity disorder.

The studies documented neurobehavioral differences when manganese concentrations ranged from 120 micrograms per liter to more than 400 micrograms per liter.



Farmer Dick Zimmerlee collected two bottles of water from his toilet tank in Crook County, Oregon on May 1, 2023. Water in his toilet bowl looks perfectly clear, as does what runs from his taps. Only after the water stands and is exposed to air do fine black particles reveal themselves.

Emily Cureton Cook / OPB

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Ten of the 13 wells residents had tested near the mine were at or above that threshold. All of them were above concentrations known to give water a bad taste and leave stains.

Despite the growing concern over manganese, federal clean water laws don't apply to it. In decades-old guidelines, the U.S. Environmental Protection Agency advises that at 50 micrograms per liter, manganese can cause aesthetic problems that could stop people from using it. The EPA says manganese is a health concern at or above 300 micrograms per liter.

Three of the 13 Crook County wells exceeded that benchmark.

Other countries and public health organizations have recently adopted much stricter health standards.

In 2019, Canada lowered its maximum acceptable concentration to 120 micrograms per liter. The World Health Organization is considering lowering its health-based guideline to just 80 micrograms per liter.

Oregon follows the EPA's 2004 guidelines. Oregon Health Authority public health toxicologist Dave Farrer said in an email exchange that other countries have added "very large safety buffers," based on studies that exposed animals to exponentially higher concentrations than any of the regulatory health limits for people.

Anyone who isn't an infant could safely drink water with up to 1,000 micrograms per liter for up to a year, Farrer said. Above that level, "It would be best for no one to drink it even for a day."

'Not a home'

Don Porfily said he drank from his kitchen tap for 25 years, until last fall.

The water recently contained 1,120 micrograms of manganese per liter, nearly four times the EPA's health advisory level. That's according to lab testing of a May sample collected by OPB, which also revealed arsenic above the federal maximum contamination limit.



On the northern edge of the Woodward pit a natural stream runs on April 6, 2023. The stream becomes an irrigation canal during summer months. After a neighbor complained in 2021, Knife River admitted it had discharged water from the mine into the canal without permit, resulting in a \$20,822 penalty from the Oregon Department of Environmental Quality.
Emily Cureton Cook / OPB

In a sample from Porfily last year, a different lab found lower levels of manganese, at nearly 500 micrograms per liter. By then, he had already stopped using the water for anything except flushing the toilet. He said the sprinklers don't run anymore because the pipes are so clogged.

"I haven't got any water to speak of in the house," he said. "It's not a home."

When his neighbor Ashley McCormick first sent her own tap water sample to a lab, it found 400 micrograms per liter of manganese. She's since spent thousands on a new well pump and a filtration system to make the water more usable for her family of five.

The costly system is online, but the smell and discoloration remain. Subsequent testing paid for by OPB showed tap water manganese concentrations still above the federal aesthetic contamination level, at 160 micrograms per liter.

Her family doesn't drink it anymore. She even stopped bathing her three kids in it. The water leaves stains, she said, and recently one of her boys came down with severe hives that doctors couldn't explain.

Experts say manganese isn't readily absorbed through the skin, but at this point, McCormick is freaked out.

"We just take super quick showers," she said.

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She has considered selling. Though, as a real estate agent, she knows she'll have to disclose the water problems. It was once her dream home. Now, she wonders, "Who's going to want to buy it?"



Windy Acres Dairy owner Billie Johnson worries a spate of 9 stillborn calves in a year at her property near the mine site are related to water problems. May 1, 2023.
Emily Cureton Cook / OPB

Byran Zednik is also feeling done. He raises cattle in the valley. After having to cut a bloated, dead calf from its mother's womb piece by piece, killing both— he sent a blood sample from the mother to a lab. The blood showed manganese levels outside the normal range, according to a text from his veterinarian that Zednik shared. He wants to get out of the meat business and focus on raising crops.

"We're selling our cows because we're not going to pass that into the meat," he said.

Reluctant regulators

The problem for homeowners around the Woodward pit mining site is that there is no data on manganese levels before the mine opened. Real estate transactions in Oregon don't require such tests, and without that information, it's difficult to say if all the broken appliances, dead cattle and hives are attributable to Knife River.

State regulators have relied on this lack of data to dismiss complaints against the mining company, too. To independently assess the complaints, OPB reviewed hundreds of public records detailing the state response and spoke to key officials, geologists, Knife River representatives, eight residents living near the mine, and an independent expert on manganese.

Private wells in Oregon are not regulated. It's a homeowner's responsibility to know what's in their drinking water, said Oregon Department of Environmental Quality spokesperson Laura Gleim.



Trucks haul aggregates out of the Woodward pit on April 12, 2023.

Emily Cureton Cook / OPB

Still, per DEQ rules, mining sites are not allowed to degrade groundwater. The agency can bring enforcement actions against polluters. Since 2015, DEQ has issued more than \$330,000 in penalties against Knife River and one of its subsidiaries for water quality violations, including a \$20,822 fine last year related to the Woodward pit.

But when it comes to investigating complaints about water pollution by mining operations, DEQ passes responsibility to a different state agency, one that has much closer ties to the mining industry.

The Oregon Department of Geology and Mineral Industries employed geologist Bob Houston for more than 20 years before he became an environmental manager for Knife River in November 2021.

The hire wasn't unusual, Houston said.

"When I was in the [DOGAMI] role, we did have some staff that retired and then went back to private consulting," he said. "There's a boundary there that our integrity and our professionalism won't cross."

This year, DOGAMI officially concluded that the Knife River's Woodward pit is not responsible for contaminating groundwater.

State records show DEQ staff didn't initially agree with DOGAMI's assessment.

"We lack critical evidence to prove/disprove contamination from the mining activities," DEQ Water Quality Permitting Manager Mike Hiatt wrote in a Jan. 25 email to a supervisor.

By then, key DOGAMI staff had already made up their minds. They'd been aware of various grievances about the mine for a year before allegations of groundwater contamination surfaced.



Farmer Dick Zimmerlee shares an office with his partner Debbie Magard on April 6, 2023. The couple has taken the lead in shouldering expenses to oppose Knife River's expansion in Crook County, Oregon. "David slew Goliath," Zimmerlee said.

Emily Cureton Cook / OPB

Since December 2021, neighbor Zimmerlee filed complaints on a variety of issues and repeatedly pressed DOGAMI for a site inspection, to no avail. Instead, the agency asked Knife River to respond.

DOGAMI shelved that complaint without drafting a formal response to Zimmerlee, according to records reviewed by OPB.

Feeling ignored and frustrated, Zimmerlee bypassed DOGAMI last October and went directly to DEQ with water quality concerns. But, the environmental agency kicked the complaint back to DOGAMI.

Its staff was immediately dismissive, their emails show. They did not want to investigate at all, saying Zimmerlee did not include enough new information or evidence that Knife River was to blame. They said the metals turning up in local water test results – manganese and in some cases aluminum — aren't associated with sand and gravel mining.

A history of complaints

Zimmerlee wasn't the only neighbor to contact state regulators about the Woodward pit.

Karen Mikulski lives across the street, and she wrote to officials in November 2021 to allege Knife River dumped "hundreds of truckloads of concrete and asphalt" into the mine as filler. Mikulski also said she saw a hose pumping water from a pit into a nearby stream.

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At that online meeting, the company reportedly said a few neighbors were organizing to oppose the expansion, and “their objective is to portray [Knife River Corporation] as bad operators,” according to notes DOGAMI staff took.

The company’s environmental manager Jeff Steyaert admitted water from a pit had flowed to a creek, though only for a fraction of the time Mikulski said she witnessed it. The admission would lead to a \$20,822 DEQ fine.



On the northern edge of the Woodward pit, a natural stream runs on April 6, 2023. The stream becomes an irrigation canal during the summer months. After a neighbor complained in 2021, Knife River admitted it had discharged water from the mine into the canal without a permit, resulting in a \$20,822 penalty from the Oregon Department of Environmental Quality.

Emily Cureton Cook / OPB

Knife River also acknowledged burying concrete debris in the mined farmland, a possible violation of its permit.

In an interview this month, Knife River Northwest Technical Services Manager Matt Ropp initially denied the company had buried construction materials in the mine until confronted with DOGAMI records obtained through a public records request.

“I was not aware of that,” Ropp said.

In a subsequent email, he confirmed that staff buried 8,000 cubic yards of concrete — roughly 31 million pounds — in the Woodward pit between June and August of 2019.

DOGAMI spokesperson Alex Lopez acknowledged that burying the debris was “clearly inconsistent” with Knife River’s operating permit, but said any regulatory action would be DEQ’s responsibility, not his agency’s.

The agency’s hydrogeologist Bob Brinkmann said that, generally, it’s on mining operators to make sure they follow the rules.

“It’s like you have a driver’s license. You’re supposed to know what the law is and not speed excessively,” Brinkmann said.

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Knife River responds

Knife River said it began quarterly monitoring of two residential wells near the Woodward pit before it opened in 2016. Those tests have shown the water is safe, according to Knife River, but neighbors and their experts say the wells aren't actually located in areas where groundwater would flow from the mining site.

Last year, the company hired a water quality consultant, Amber Hudspeth, to summarize its data in a memo to DOGAMI. Hudspeth found the monitored wells hadn't changed much in seven years.

She concluded that the manganese and aluminum turning up in other water tests was naturally occurring and the result of volcanic geology, or possibly related to historical land uses.



A field at the Woodward site on April 12, 2023. Knife River's permit for sand and gravel mining requires it to return the land to a farmable condition.

Emily Cureton Cook / OPB

There has been gravel mining in this area before, and the Woodward pit is partially located on the site of a defunct lumber mill. Hudspeth also pointed to the presence of manganese in the city of Redmond's well water supply, 20 miles away.

DOGAMI geologist Brinkmann agreed with the company's conclusions. He said in an interview that the data show a pattern linking metals in groundwater to certain well depths.

Knife River geologist Bob Houston added another theory to the mix in a recent email to OPB. Houston said there are wells throughout

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Knife River and state officials have also pointed out that Zimmerlee's house isn't in the path of the groundwater's flow, yet he reports manganese detections and a black toilet tank.

When Hudspeth tested Zimmerlee's water in 2022, she found much lower levels of manganese and aluminum than his own samples had shown. OPB's 2023 testing did not find concerning levels of either metal.

"I don't know that Knife River, as a private business, is the correct party to go beyond our operations in order to try to figure out why a person's toilet is stained," said Knife River's Matt Ropp.

He encouraged people with concerns to bring them directly to the company, instead of regulators.

"We do our best to try to manage our operations and, and to communicate with our neighbors in order to minimize impacts to them," Ropp said.

OPB asked Ropp if, as a way to restore goodwill with the neighbors opposing the expansion, the company would consider paying for residential water filtration systems without admitting fault.

Ropp said no: "I am not fond of the idea of buying people off."

The price of non-disclosure

Adam Mikulski came to Knife River with concerns about its Woodward pit before it opened in 2016.

State records suggest those negotiations led the company to pay for a new well at Mikulski's house, across the street from the pit. The driller initially listed Knife River as the owner of the well. The company's name was later crossed out of the paperwork and replaced with Mikulski's.

Knife River monitors that well now, and its data was used to support dismissing the recent groundwater complaints.

Mikulski won't discuss the deal, he said, because of a non-disclosure agreement.

That didn't stop his wife Karen from contacting DOGAMI in 2021 to report the company for illegal dumping, resulting in the DEQ penalty.

The agencies' response left Adam Mikulski feeling cynical.

"They just take [Knife River's] word for it and, and they don't come out and check," he said of the regulators.



Heavy machinery mingles with irrigation equipment on the edge Knife River's Woodward pit in Crook County, Oregon. April 12, 2023
Emily Cureton Cook / OPB

DOGAMI has not sent an inspector to the site since June 2021, before the complaints began.

Mikulski said he regrets initially going directly to the company because there is no public record of his concerns, nor the promises made to smooth them over.

Lately, DOGAMI appears to be rethinking its conclusions.

On June 5, the geologist working for local residents, Jim Newton, got an email from the DOGAMI's Executive Director and State Geologist Ruarrri J. Day-Stirrat. It asked Newton to come to a closed-door meeting in Portland at the end of June.

The purpose is to discuss the manganese in Crook County's water. Knife River and Hudspeth are also invited.

"There will be no other participants," Day-Stirrat wrote to Newton. "I expect a series of slides laying out your data, your hypotheses, and a discussion of solutions based on your hypotheses."

Meanwhile, two U.S. Senators want to shift the responsibility and expense of providing answers away from the local residents and their paid consultant.

On June 7, Democratic Sens. Ron Wyden and Jeff Merkley sent a letter to the EPA's top Administrator Michael Regan, saying they "have a particular concern about a mine in Oregon that is currently seeking an expansion," and calling on the agency to examine the groundwater allegations as soon as possible.

In an interview, Merkley, a former state lawmaker, questioned the thoroughness of DOGAMI's conclusions, and the state agency's **objectivity in investigating the industry.**

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He wants the EPA to do an independent investigation of the Woodward pit operation and its proposed expansion.

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Justin Hoggarth

Patient	Length	Phone	Email	Type	Comment	
07:00a						
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07:20a						
07:30a	Standley, Sheril COPAY	30 mins	(541) 279-0185	sherilatccmed@gmail.com	FDEVL	L knee pain
07:40a					sheril standley	
07:50a						
08:00a	McKenzie, Chloe COPAY	30 mins			STX	DO NOT COLLECT COPAYS-S
08:10a						
08:20a						
08:30a	Rasmussen, Randy COPAY	30 mins	(541) 447-7492		FDTX	
08:40a						
08:50a						
09:00a	Oberg, Steven G COPAY	30 mins		gr8cr8@gmail.com	MTX	L TKA
09:10a						
09:20a						
09:30a	Pilon, Mark R COPAY	30 mins		mark.z.pilon@gmail.com	MTX	L shoulder surgery on 6/7/24
09:40a						
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10:00a	Armstrong, Mark COPAY	30 mins		casca1012@gmail.com	MTX	coccygeal pain
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02:10p						
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02:30p	Thompson, William COPAY	30 mins			STX	R hip
02:40p						
02:50p						

Exhibit 2



Hannah Elliott

From: jim newton <newtonjim@hotmail.com>
Sent: Wednesday, March 2, 2022 3:32 PM
To: Hannah Elliott; Plan
Subject: Re: CROOK COUNTY COURT HEARING RECORD NUMBER 217-21-000537-PLNG; CGE Submittal for Vanier File
Attachments: Vanier-KR 3-2-2022 CGE - Memorandum Crook Co File 217-21-000537-PLNG.pdf

To Whom it may concern:

Enclosed is a memorandum prepared by Cascade Geoengineering, LLC in response to the proposed mine expansion of the Vanier/Knife River Site included in CROOK COUNTY PLANNING RECORD NUMBER 217-21-000537-PLNG.

Please admit this memorandum into the county record for review.

If you have any questions regarding this submittal, please contact me at your earliest convenience, my contact information is shown below.

Best,
~Jim

Jim Newton, PE, RG, CWRE
Principal - Engineer-Geologist
Cascade Geoengineering, LLC
21145 Scottsdale DR
Bend, Oregon 97701
360-907-4162
www.cascadegeoengineering.com

CROOK COUNTY
MAR 02 2022
PLANNING DEPT

Memorandum

CROOK COUNTY
MAR 02 2022
PLANNING DEPT



CASCADE
GEOENGINEERING

21145 Scottsdale DR, Bend, Oregon 97701
360-907-4162 newtonjim@hotmail.com

March 2, 2022

TO:

Crook County
Community Development Department
Planning Division
300 NE 3rd Street, Room 12
Prineville, Oregon 97754

FROM:

Jim Newton, P.E., R.G., C.W.R.E.

RE: CROOK COUNTY COURT HEARING RECORD NUMBER 217-21-000573-PLNG; REVIEW OF KNIFE RIVER DOCUMENTS SUBMITTED FOR THE PROPOSED MINING REALTED TO HEARING NUMBER 217-21-000436-PLNG. SITE LOCATED NEAR PRINEVILLE, OREGON

Dear Crook County Community Planning Department:

This memorandum has been prepared by Cascade Geoengineering, LLC (CGE) on behalf of Richard Zimmerlee (resident and lease property farm tenant of the Vanier property located at 6487 NW Lamonta Road), and provides a review of a portion of the Knife River Corporation-Northwest (KR) Crook County Condition Use Application file number 217-21-000436-PLNG (Application), specifically, exhibits and testimony prepared by Stantec Consulting Services Inc. (Stantec) and Mr. Christopher Lidstone of Stantec, respectively. This memorandum has been prepared to supplement information into the County record for Conditional Use Application file number 217-21-000537-PLNG, as recently the County allowed information from the Application to be transferred to file number 217-21-000537-PLNG. The review contained within this memorandum was completed and prepared by Jim Newton of CGE, an Oregon registered professional geologist (RG), Oregon registered professional engineer (PE) and Oregon certified water right examiner (CWRE).

This memorandum has been prepared by CGE to directly address concerns related to the Vanier Site below:

- Proposed post-mining reclamation contours are proposed to essentially mimic the current groundwater levels recorded at the site, affecting future land use of the reclaimed mine site and potential impacts to groundwater quality;
- Mine strategies proposed by KR for the Vanier site are general mining approaches, however, site specific conditions may render these mining approaches ineffective, and KR has not conducted a detailed technical review of the existing site conditions in an attempt to prepare for, or anticipate the potential magnitude of groundwater impacts mining may pose to the Site;
- Testimony provided by Mr. Christopher Lidstone, as a paid consultant of KR, appeared to be ignorant, or possibly misleading, as to the extent of exploration that may have been conducted by KR in the past, as Mr. Lidstone testified to the Crook County Court on December 3, 2021 that no borings were conducted on the Vanier site, only test pits (noted as dug with an excavator, which is essentially a tracked backhoe with greater depth of digging capacity) were conducted on the site.
 - This may be true that Stantec did not install borings on the Vanier site as far as Mr. Lidstone testified to, however, KR installed borings at locations included in the, *"Aggregate Resource Investigation Vanier Site Prineville, Oregon 2019-2020"* prepared by Mr. Tim Marshall of KR, dated July 2020. And Further, Stantec noted in their *"Woodward/Vanier Aggregate Mine Hydrogeologic Characterization"* report prepared by Stantec Consulting Services Inc. (Stantec), dated March 2021, that, *"To assess the aggregate resources at Vanier, Knife River conducted a site investigation in June 2019. Seven soil borings were drilled to depths between 30 and 35 feet to assess the lateral continuity of the sand and gravel resources. The locations of these borings are noted on Figure 2."*

INTRODUCTION

The review of Knife River and Stantec documents included in the public record for Crook County report was requested of CGE by Mr. Zimmerlee based on his concern over potential groundwater conditions that may change as a result of the proposed expansion of the existing Knife River Woodward. Mr. Zimmerlee is currently leasing the Vanier lands included in the KR and the Vanier Applications, and has leased the reclaimed portions of the existing Woodward portion of the active KR mine site. Mr. Zimmerlee is concerned that during active mining of the Vanier property, groundwater conditions may change in ways that affect the ability to continue to farm portions of the undisturbed Vanier lands, and, upon reclamation of the post-mined Vanier lands also. These concerns have been expressed to the County by Mr. Zimmerlee and included in documents contained with the KR Application and included in the Vanier Application.

Jim Newton of CGE has maintained contacted with Mr. Zimmerlee since October 2021 regarding the KR Application, and more recently regarding the Vanier Application, and to provide additional details to the County regarding the proposed mining and reclamation of the proposed Vanier Site (the Vanier site is effectively the proposed expansion of the existing KR Woodward mine site, as Vanier borders the KR Woodward site to the immediate east and north, shown on an annotated KR County Exhibit 59 attached).

As part of the maintained contact with Mr. Zimmerlee, Mr. Newton conducted a site visit to the Vanier site on March 1, 2022 to measure the onsite domestic well of Mr. Zimmerlee's residence located at 6487 NW Lamonta Road, and observe test pits installed by Mr. Zimmerlee on February 28, 2022.

Mining Strategies Proposed by Stantec

Based on proposed mining strategies proposed by Stantec there are methods available to possibly mine the site with minimal impacts to groundwater or groundwater quality. This may be true, however, the greatest concern related to mining may lie more with the reclamation of the mine site and potential uses for the Vanier Site, as groundwater is encountered at depths at less than 10-feet and other areas less than 13-feet. With mine reclamation proposing to lower the current ground surface to less than 2-feet of encountered groundwater (or possibly closer), it would appear that KR is proposing to leave the site in a condition that may not allow for the area to return to farm use, and leave the shallow aquifer highly susceptible to contamination from ground surface applications associated with farming (e.g., application of fertilizers, pesticides or herbicides).

Post-Mining Reclamation Contours Proposed by Knife River

The proposed post-mining reclamation land contours of the Vanier Site were presented in Exhibit 59 of the KR Application, title "*Final Reclamation Contours Vanier/Woodward NWR—COR*" with a receipt stamped date of November 15, 2021 by Crook County Planning Dept. CGE conducted a comparison of the proposed reclamation contours in relation to the measured depth to groundwater and comparison of existing ground surface elevations, these findings are below:

- The attached KR Exhibit 59 has been annotated by CGE to note the location of a test pit ZT-2 dug with a backhoe by Mr. Zimmerlee on February 28, 2022 and observed by Mr. Newton of CGE on March 1, 2022.
 - The noted depth to groundwater in the test pit was measured 118-inches below ground surface (bgs), or approximately 9.83-feet bgs. The existing surface elevation of ZT-2 is 2,922-feet, as noted by Google Earth Pro. This would yield an elevation of groundwater at the Site as 2912.17-feet bgs, by comparison, the KR noted 'final reclamation contours' at this location would be slightly less than approximately 2,914 feet (based on a general scale of the KR Exhibit 59, this would yield an estimated ground surface elevation of 2,913.86 feet), a difference between the groundwater elevation and proposed post-mining ground surface of 1.69-feet in elevation.
- The measured depth to groundwater of the domestic well located at the Zimmerlee residence at 6487 NW Lamonta Road was measured on March 1, 2021 at 12.65-feet bgs. During a site visit to this same well on November 10, 2021 CGE measured a water level in the well of approximately 10.08 feet bgs. Based on Google Earth Pro, the surface elevation of the Zimmerlee domestic well is 2,928-feet, this would yield a groundwater elevation in March 1, 2021 as 2,915.25.

Review of Stantec Installed Test Pits and KR Installed Well Borings

Based on a review of the Stantec Report and comparison of Mr. Lidstone's testimony during the December 3, 2021 Crook County Court hearing appear to differ significantly. Mr. Lidstone, a stated employee of Stantec and paid consultant for KR, testified in response to Mr. Newton's testimony during the December 3, 2021 hearing that some of the test borings could have been completed as monitoring wells, that no borings were installed on the Vanier Site. If Mr. Lidstone was involved in the preparation of the Stantec report for the Vanier Site, as he also testified being involved with the preparation of the Stantec report, Mr. Lidstone should have noted that on page 3.1, paragraph 2 of the Stantec report there is a specific reference to KR borings installed on the Vanier site, quoted from the Stantec report as, *"To assess the aggregate resources at Vanier, Knife River conducted a site investigation in June 2019. Seven soil borings were drilled to depths between 30 and 35 feet to assess the lateral continuity of the sand and gravel resources. The locations of these borings are noted on Figure 2."* A copy of the Stantec Figure 2 is included to this memorandum for reference.

Additionally, Oregon has required the filing of borings, whether they were installed for water wells, geotechnical borings, exploration or other means since 1955 and currently regulated under Oregon Administrative Rules 690-240. During the installation of test borings installed during the Site investigation by KR for the Vanier Site, geotechnical well logs were filed for these borings and are publicly available on the Oregon Water Resources Department (OWRD) webpage www.oregon.gov/owrd. The well boring logs are attached to this memorandum, with each well log containing a simple site location map also showing the location of each of the well borings.

CONCLUSIONS

Based a review of the KR submittals associated with Crook County File 217-21-000573-PLNG and testimony provided by Mr. Christopher Lidstone, as a consultant for KR, and the above concerns, it is the opinion of CGE that KR has not prepared a thorough review of the Vanier Site with adequate understanding of the site conditions to prepare a mining approach, or reclamation plan that may allow the Vanier Site to be mined responsibly by reducing impacts to the existing and future use of the Vanier Site and immediate lands. With there being potential long-term risk to the shallow groundwater aquifer on the Vanier Site and surrounding area and KR's limited understanding of the Site conditions, not allowing mining of Vanier Site as proposed at this time without a full understanding or consideration for long-term affects is likely prudent.

As noted in the CGE Memorandum dated November 15, 2021, the following recommendations are still warranted:

"RECOMMENDATIONS

Considering the likelihood that KR will continue to pursue permitting of the expansion/Vanier area, CGE would like to offer recommendations that may provide additional basis for geologic and hydrogeologic

investigations that may assist the applicant to address concerns by Mr. Zimmerlee and potentially other nearby landowners:

- *If KR or Stantec is to conduct additional analysis on potential groundwater impacts to the proposed KR mining expansion/Vanier area, it would be recommended the investigative and evaluation work be conducted under the direction of an Oregon registered professional geologist that will certify such work and follow Oregon guidelines as presented by the Oregon State Board of Geologist Examiners.*
- *Install exploratory borings and wells within the actual proposed expansion/Vanier mining area, this will allow the evaluation of actual materials to be mined, and the aquifer to be impacted by mining to be evaluated.*
- *Engage with concerned neighboring residents/landowners in a manner that is proactive to address concerns directly and provide an avenue for neighbors to both voice concerns and develop mining and reclamation strategies that addresses these concerns.”*

CLOSURE

If you have questions regarding this memorandum, please feel free to contact me at your convenience. I can be reached by email at newtonjim@hotmail.com, or by telephone at 360-907-4162.

Sincerely,



Expires 5/1/2022

Jim Newton, PE, RG, CWRE
Principal – Engineer-Geologist
Cascade Geoengineering, LLC

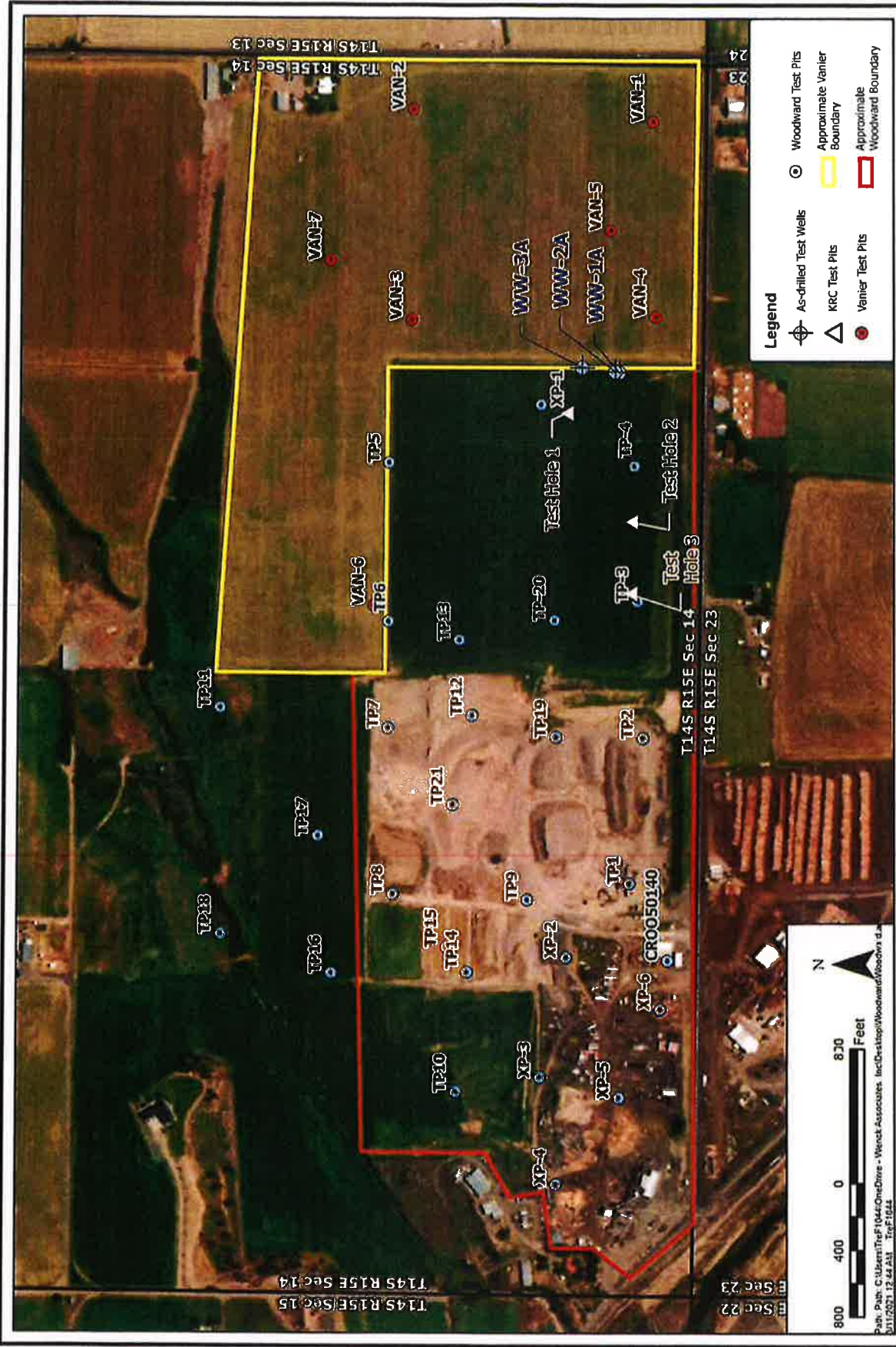


Notes Added by CGE 3-2-2022

- ZT-2 Notes location of Test Pits installed by Mr. Zimmerlee 2-28-0022
- ❖ Location of Zimmerlee Domestic Well

CROOK COUNTY
NOV 15 2021
PLANNING DEPT

EXHIBIT
 59



MAR 2021
 Figure 2



KNIFE RIVER
 As-drilled Test Wells and Test Pits

STATE OF OREGON
GEOTECHNICAL HOLE REPORT
(as required by OAR 690-240-0035)

8/20/2019

(1) OWNER/PROJECT Hole Number B-1
PROJECT NAME/NBR: 110-19-1059
First Name ROBERT J (JR) Last Name VANIER
Company
Address PO BOX 326
City DAYVILLE State OR Zip 97825

(2) TYPE OF WORK [X] New [] Deepening [X] Abandonment
[] Alteration (repair/recondition)

(3) CONSTRUCTION
[] Rotary Air [] Hand Auger [] Hollow stem auger
[] Rotary Mud [] Cable [] Push Probe
[X] Other SONIC

(4) TYPE OF HOLE:
[] Uncased Temporary [] Cased Permanent
[] Uncased Permanent [] Slope Stability
[] Other

(5) USE OF HOLE
SOIL SAMPLES

(6) BORE HOLE CONSTRUCTION Special Standard [] Attach copy
Depth of Completed Hole 35.00 ft.
BORE HOLE SEAL
Dia From To Material From To Amt sacks/lbs

Backfill placed from 0 ft to 2 ft. Material SOIL / GRAVEL
Filter pack from ft to ft. Material Size

(7) CASING/SCREEN
Casing Screen Dia + From To Gauge Sil Plstc Wld Thrd

(8) WELL TESTS
[] Pump [] Bailer [] Air [] Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration(hr)

Temperature 52 °F Lab analysis [] Yes By
Supervising Geologist/Engineer
Water quality concerns? [] Yes (describe below) TDS amount 110 ppm

(9) LOCATION OF HOLE (legal description)
County CROOK Twp 14.00 S N/S Range 15.00 E F/W WM
Sec 14 SE 1/4 of the SE 1/4 Tax Lot 00103
Tax Map Number Lot
Lat " or DMS or DD
Long " or DMS or DD
[] Street address of hole [] Nearest address
6487 NW LAMONTA ROAD, PRINEVILLE, OR 97754

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Predeepening
Completed Well 6/12/2019 18
Flowing Artesian? []
WATER BEARING ZONES Depth water was first found 18.00
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(11) SUBSURFACE LOG Ground Elevation
Material From To
Sandy Silt 0 9
Silty sand w/ gravel 9 19
Sand and Gravel 19 29
Silt 29 35
Date Started 6/12/2019 Completed 6/12/2019

(12) ABANDONMENT LOG:
Material From To Amt lbs
Other 0 2 2 S
Bentonite Chips 2 35 9 S
Date Started 6/12/2019 Completed 6/12/2019

Professional Certification (to be signed by an Oregon licensed water or monitoring well constructor, Oregon registered geologist or professional engineer).
I accept responsibility for the construction, deepening, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.
License/Registration Number 10637 Date 8/20/2019
First Name ZANE Last Name SHADRICK
Affiliation ZANESHADRICK

GEOTECHNICAL HOLE REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

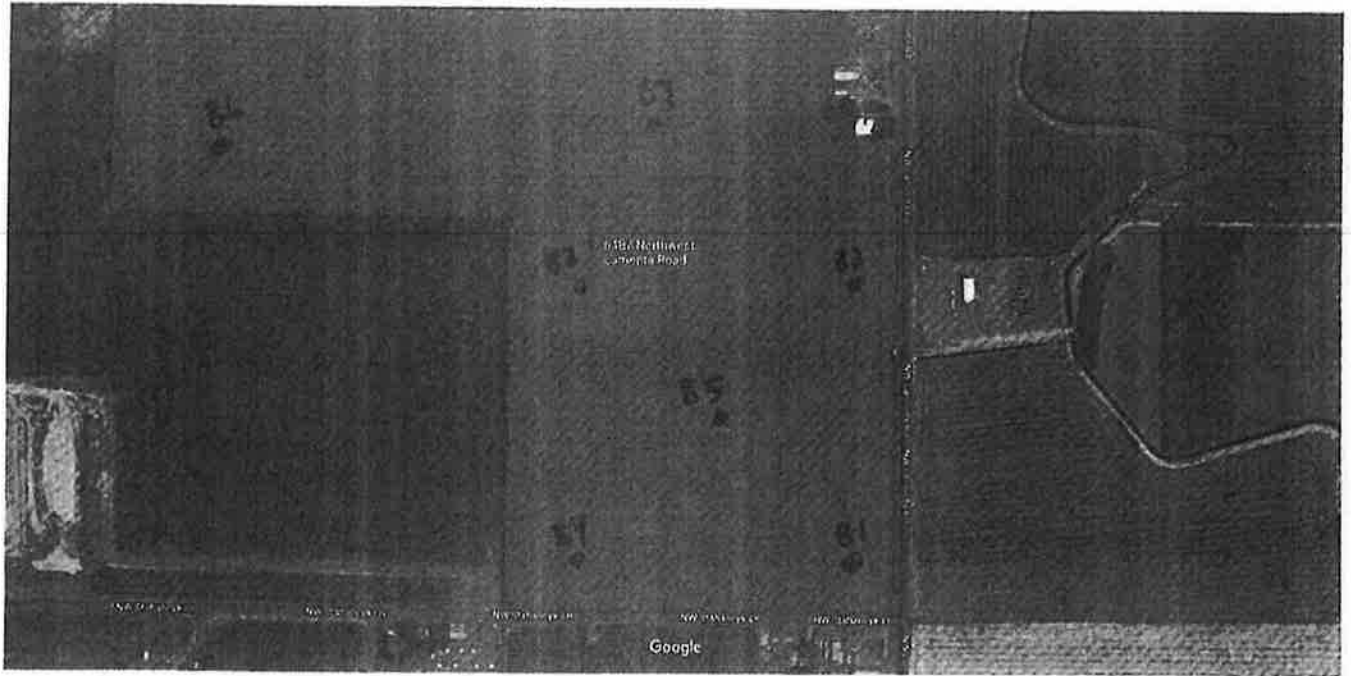
CROO 54795

8/20/2019

Map of Hole

Google Maps 6487 NW Lemonta Rd
Pineville OR

110-19-1059



STATE OF OREGON
GEOTECHNICAL HOLE REPORT
(as required by OAR 690-240-0035)

8/20/2019

(1) OWNER/PROJECT Hole Number B-2

PROJECT NAME/NBR: 110-19-1059

First Name ROBERT J (JR.) Last Name VANIER

Company _____

Address PO BOX 326

City DAYVILLE State OR Zip 97825

(2) TYPE OF WORK New Deepening Abandonment
 Alteration (repair/recondition)

(3) CONSTRUCTION
 Rotary Air Hand Auger Hollow stem auger
 Rotary Mud Cable Push Probe
 Other SONIC

(4) TYPE OF HOLE:
 Uncased Temporary Cased Permanent
 Uncased Permanent Slope Stability
 Other _____

(5) USE OF HOLE
SOIL SAMPLES

(6) BORE HOLE CONSTRUCTION Special Standard (Attach copy)
Depth of Completed Hole 35.00 ft

BORE HOLE SEAL

Dia	From	To	Material	From	To	Amt	sacks/ lbs
6	0	35	Other	0	2	2	S
			Bentonite Chips	2	35	9	S

Backfill placed from 0 ft to 2 ft Material SOIL / GRAVEL
Filter pack from _____ ft to _____ ft Material _____ Size _____

(7) CASING/SCREEN

Casing	Screen	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS
 Pump Bailer Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration(hr)

Temperature 52 °F Lab analysis Yes By _____

Supervising Geologist/Engineer _____

Water quality concerns? Yes (describe below) TDS amount 110 ppm

From	To	Description	Amount	Units

(9) LOCATION OF HOLE (legal description)

County CROOK Twp 14.00 S N/S Range 15.00 E E/W WM

Sec 14 NE 1/4 of the SE 1/4 Tax Lot 00103

Tax Map Number _____ Lot _____

Lat _____ " or _____ DMS or DD

Long _____ " or _____ DMS or DD

Street address of hole Nearest address

6487 NW LAMONTA ROAD, PRINEVILLE, OR 97754

(10) STATIC WATER LEVEL

Existing Well / Predeepening	Date	SWL(psi)	+ SWL(ft)
Completed Well	<u>6/12/2019</u>		<u>18</u>

Flowing Artesian?
WATER BEARING ZONES Depth water was first found 18.00

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
<u>6/12/2019</u>	<u>18</u>	<u>35</u>			<u>18</u>

(11) SUBSURFACE LOG Ground Elevation _____

Material	From	To
Silt	0	10
Sandy silt	10	17
Sand and Gravel	17	28
Sandy Silt	28	35

Date Started 6/12/2019 Completed 6/12/2019

(12) ABANDONMENT LOG:

Material	From	To	Amt	sacks/ lbs
Other	0	2	2	S
Bentonite Chips	2	35	9	S

Date Started 6/12/2019 Completed 6/12/2019

Professional Certification (to be signed by an Oregon licensed water or monitoring well constructor, Oregon registered geologist or professional engineer).

I accept responsibility for the construction, deepening, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.

License/Registration Number 10637 Date 8/20/2019

First Name ZANE Last Name SHADRICK

Affiliation ZANESHADRICK

GEOTECHNICAL HOLE REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

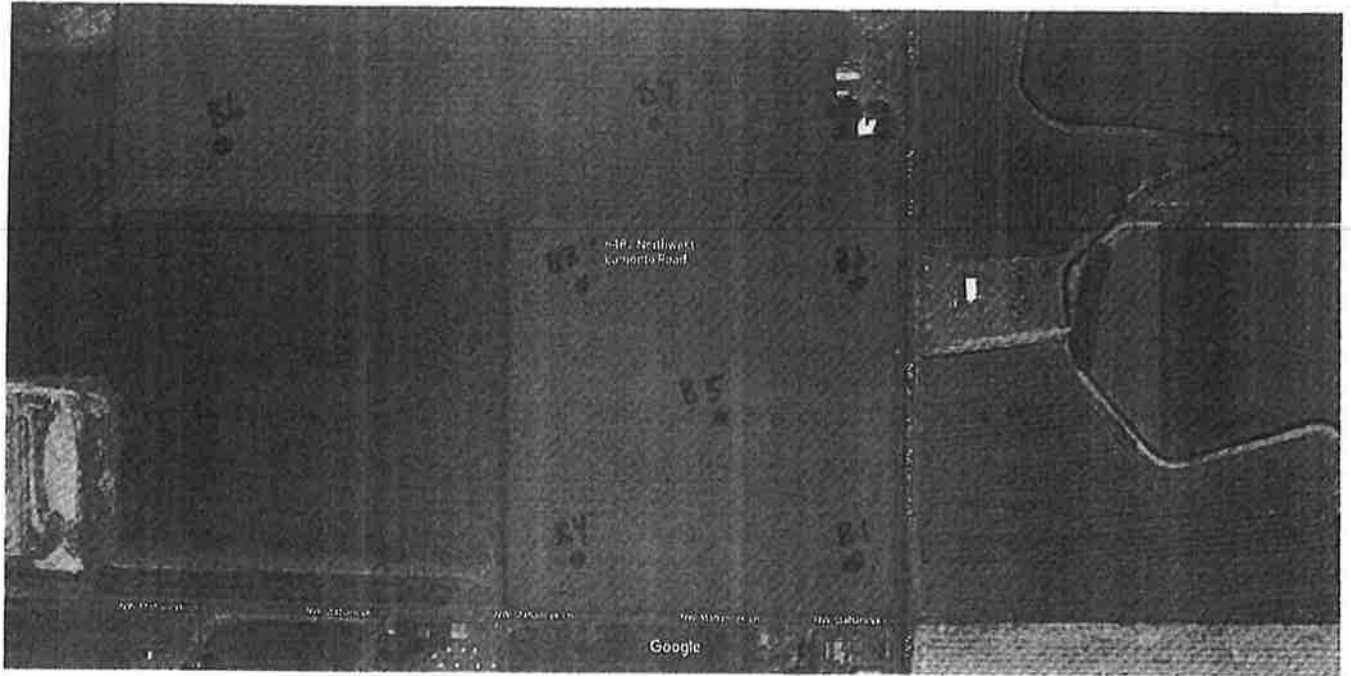
CROO 54796

8/20/2019

Map of Hole

Google Maps 6487 NW Lemona Rd
Pineville, OR

110-19-1059



STATE OF OREGON
 GEOTECHNICAL HOLE REPORT
 (as required by OAR 690-240-0035)

8/20/2019

(1) OWNER/PROJECT Hole Number B-3

PROJECT NAME/NBR: 110-19-1059

First Name ROBERT J (JR.) Last Name VANIER

Company _____

Address PO BOX 326

City DAYVILLE State OR Zip 97825

(2) TYPE OF WORK New Deepening Abandonment
 Alteration (repair/recondition)

(3) CONSTRUCTION

Rotary Air Hand Auger Hollow stem auger
 Rotary Mud Cable Push Probe
 Other SONIC

(4) TYPE OF HOLE:

Uncased Temporary Cased Permanent
 Uncased Permanent Slope Stability
 Other _____
 Other: _____

(5) USE OF HOLE

SOIL SAMPLES

(6) BORE HOLE CONSTRUCTION Special Standard (Attach copy)

Depth of Completed Hole 30.00 ft

BORE HOLE			SEAL			Amt	sacks/ lbs
Dia	From	To	Material	From	To		
6	0	30	Other	0	2	2	S
			Bentonite Chips	2	30	8	S

Backfill placed from 0 ft. to 2 ft. Material SOIL / GRAVEL
 Filter pack from _____ ft. to _____ ft. Material _____ Size _____

(7) CASING/SCREEN

Casing	Screen	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS

Pump Bailer Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration(hr)

Temperature 52 °F Lab analysis Yes By _____

Supervising Geologist/Engineer _____

Water quality concerns? Yes (describe below) TDS amount 110 ppm

From	To	Description	Amount	Units

(9) LOCATION OF HOLE (legal description)

County CROOK Twp 14.00 S N/S Range 15.00 E E/W WM
 Sec 14 NE 1/4 of the SE 1/4 Tax Lot 00103
 Tax Map Number _____ Lot _____
 Lat _____ " or _____ DMS or DD
 Long _____ " or _____ DMS or DD
 Street address of hole Nearest address
6487 NW LAMONTA ROAD, PRINEVILLE, OR 97754

(10) STATIC WATER LEVEL

Existing Well / Predeepening	Date	SWL(psi)	+	SWL(ft)
Completed Well	6/12/2019			18

Flowing Artesian?

WATER BEARING ZONES Depth water was first found 18.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
6/12/2019	18	30				18

(11) SUBSURFACE LOG Ground Elevation _____

Material	From	To
Sandy Silt	0	9
Silty sand	9	19
Sand and Gravel	19	29
Silt	29	30

Date Started 6/12/2019 Completed 6/12/2019

(12) ABANDONMENT LOG:

Material	From	To	Amt	sacks/ lbs
Other	0	2	2	S
Bentonite Chips	2	30	8	S

Date Started 6/12/2019 Completed 6/12/2019

Professional Certification (to be signed by an Oregon licensed water or monitoring well constructor, Oregon registered geologist or professional engineer).

I accept responsibility for the construction, deepening, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.

License/Registration Number 10637 Date 8/20/2019

First Name ZANE Last Name SHADRICK
 Affiliation ZANESHADRICK

GEOTECHNICAL HOLE REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

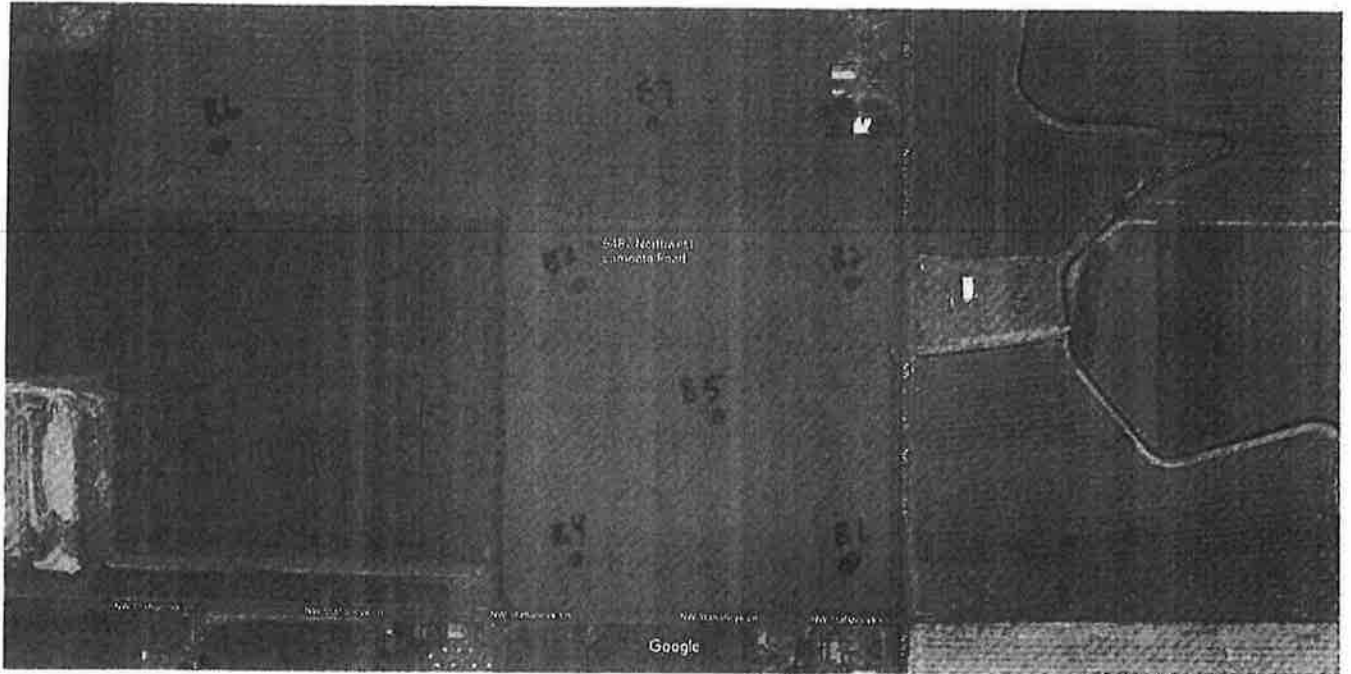
CROO 54797

8/20/2019

Map of Hole

Google Maps 6487 NW Lamonta Rd
Prineville OR

110-19-1059



Images © 2019 Google Map data © 2019

STATE OF OREGON
GEOTECHNICAL HOLE REPORT
(as required by OAR 690-240-0035)

8/20/2019

(1) OWNER/PROJECT Hole Number B-4

PROJECT NAME/NBR: 110-19-1059

First Name ROBERT J (JR.) Last Name VANIER

Company _____

Address PO BOX 326

City DAYVILLE State OR Zip 97825

(2) TYPE OF WORK New Deepening Abandonment
 Alteration (repair/recondition)

(3) CONSTRUCTION

Rotary Air Hand Auger Hollow stem auger
 Rotary Mud Cable Push Probe
 Other SONIC

(4) TYPE OF HOLE:

Uncased Temporary Cased Permanent
 Uncased Permanent Slope Stability
 Other
 Other: _____

(5) USE OF HOLE

SOIL SAMPLES

--	--	--	--	--	--	--	--

(6) BORE HOLE CONSTRUCTION Special Standard (Attach copy)

Depth of Completed Hole 30.00 ft.

BORE HOLE SEAL

Dia	From	To	Material	From	To	Amt	sacks/ lbs
6	0	30	Other	0	2	2	S
			Bentonite Chips	2	30	8	S

Backfill placed from 0 ft to 2 ft Material SOIL / GRAVEL

Filter pack from _____ ft to _____ ft Material _____ Size _____

(7) CASING/SCREEN

Casing	Screen	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS

Pump Bailer Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration(hr)

Temperature 52 °F Lab analysis Yes By _____

Supervising Geologist/Engineer _____

Water quality concerns? Yes (describe below) TDS amount 110 ppm

From	To	Description	Amount	Units

(9) LOCATION OF HOLE (legal description)

County CROOK Twp 14.00 S N/S Range 15.00 E E/W WM

Sec 14 SE 1/4 of the SE 1/4 Tax Lot 00103

Tax Map Number _____ Lot _____

Lat _____ " or _____ DMS or DD

Long _____ " or _____ DMS or DD

Street address of hole Nearest address

6487 NW LAMONTA ROAD, PRINEVILLE, OR 97754

(10) STATIC WATER LEVEL

Existing Well / Predeepening	Date	SWL(psi)	+ SWL(ft)
Completed Well	6/12/2019		18

Flowing Artesian?

WATER BEARING ZONES Depth water was first found 18.00

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
6/12/2019	18	30			18

(11) SUBSURFACE LOG Ground Elevation _____

Material	From	To
Silt	0	8
Silty sand	8	19
Sand and Gravel	19	29
Silt	29	30

Date Started 6/12/2019 Completed 6/12/2019

(12) ABANDONMENT LOG:

Material	From	To	Amt	sacks/ lbs
Other	0	2	2	S
Bentonite Chips	2	30	8	S

Date Started 6/12/2019 Completed 6/12/2019

Professional Certification (to be signed by an Oregon licensed water or monitoring well constructor, Oregon registered geologist or professional engineer).

I accept responsibility for the construction, deepening, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.

License/Registration Number 10637 Date 8/20/2019

First Name ZANE Last Name SHADRICK

Affiliation ZANESHADRICK

GEOTECHNICAL HOLE REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

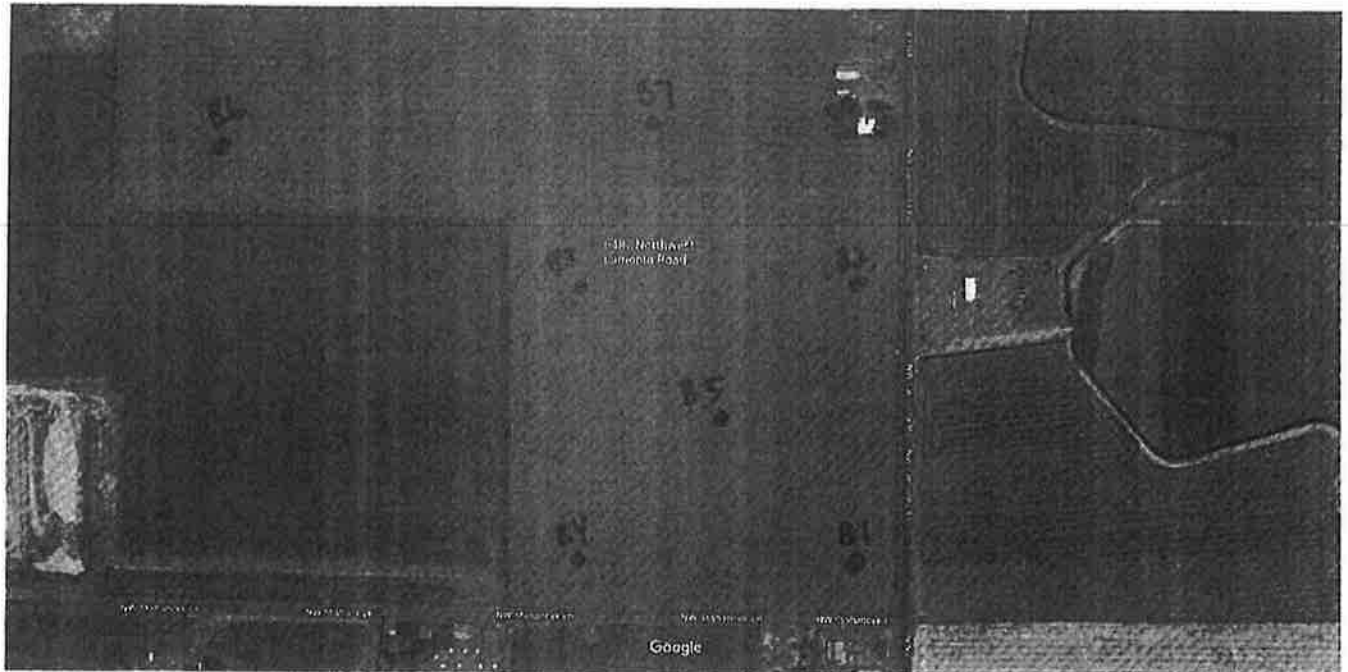
CROO 54798

8/20/2019

Map of Hole

Google Maps 6487 NW Lemonta Rd
Prineville OR

110-19-1059



STATE OF OREGON
 GEOTECHNICAL HOLE REPORT
 (as required by OAR 690-240-0035)

8/20/2019

(1) OWNER/PROJECT Hole Number B-5
PROJECT NAME/NBR: 110-19-1059
 First Name ROBERT J (JR) Last Name VANIER
 Company _____
 Address PO BOX 326
 City DAYVILLE State OR Zip 97825

(2) TYPE OF WORK New Deepening Abandonment
 Alteration (repair/recondition)

(3) CONSTRUCTION
 Rotary Air Hand Auger Hollow stem auger
 Rotary Mud Cable Push Probe
 Other SONIC

(4) TYPE OF HOLE:
 Uncased Temporary Cased Permanent
 Uncased Permanent Slope Stability
 Other
 Other: _____

(5) USE OF HOLE
 SOIL SAMPLES

(6) BORE HOLE CONSTRUCTION Special Standard (Attach copy)
 Depth of Completed Hole 35.00 ft
BORE HOLE

Dia	From	To	Material	SEAL	From	To	Amt	sacks/ lbs
6	0	35	Other		0	2	2	S
			Bentonite Chips		2	35	9	S

Backfill placed from 0 ft to 2 ft Material SOIL / GRAVEL
 Filter pack from _____ ft to _____ ft Material _____ Size _____

(7) CASING/SCREEN

Casing	Screen	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS
 Pump Bailer Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration(hr)

Temperature 52 °F Lab analysis Yes By _____

Supervising Geologist/Engineer
 Water quality concerns? Yes (describe below) TDS amount 110 ppm

From	To	Description	Amount	Units

(9) LOCATION OF HOLE (legal description)
 County CROOK Twp 14.00 S N/S Range 15.00 E E/W WM
 Sec 14 SE 1/4 of the SE 1/4 Tax Lot 00103
 Tax Map Number _____ Lot _____
 Lat _____ " or _____ DMS or DD
 Long _____ " or _____ DMS or DD
 Street address of hole Nearest address
6487 NW LAMONTA ROAD, PRINEVILLE, OR 97754

(10) STATIC WATER LEVEL

Existing Well / Predeepening	Date	SWL (psi)	+	SWL (ft)
Completed Well	6/13/2019			18

Flowing Artesian?
 WATER BEARING ZONES Depth water was first found 18.00

SWL Date	From	To	Est Flow	SWL (psi)	+	SWL (ft)
6/13/2019	18	35				18

(11) SUBSURFACE LOG Ground Elevation _____

Material	From	To
Sandy Silt	0	18
Sand and Gravel	18	32
Silt	32	35

Date Started 6/13/2019 Completed 6/13/2019

(12) ABANDONMENT LOG:

Material	From	To	Amt	sacks/ lbs
Other	0	2	2	S
Bentonite Chips	2	35	9	S

Date Started 6/13/2019 Completed 6/13/2019

Professional Certification (to be signed by an Oregon licensed water or monitoring well constructor, Oregon registered geologist or professional engineer).
 I accept responsibility for the construction, deepening, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.
 License/Registration Number 10637 Date 8/20/2019
 First Name ZANE Last Name SHADRICK
 Affiliation ZANESHADRICK

GEOTECHNICAL HOLE REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

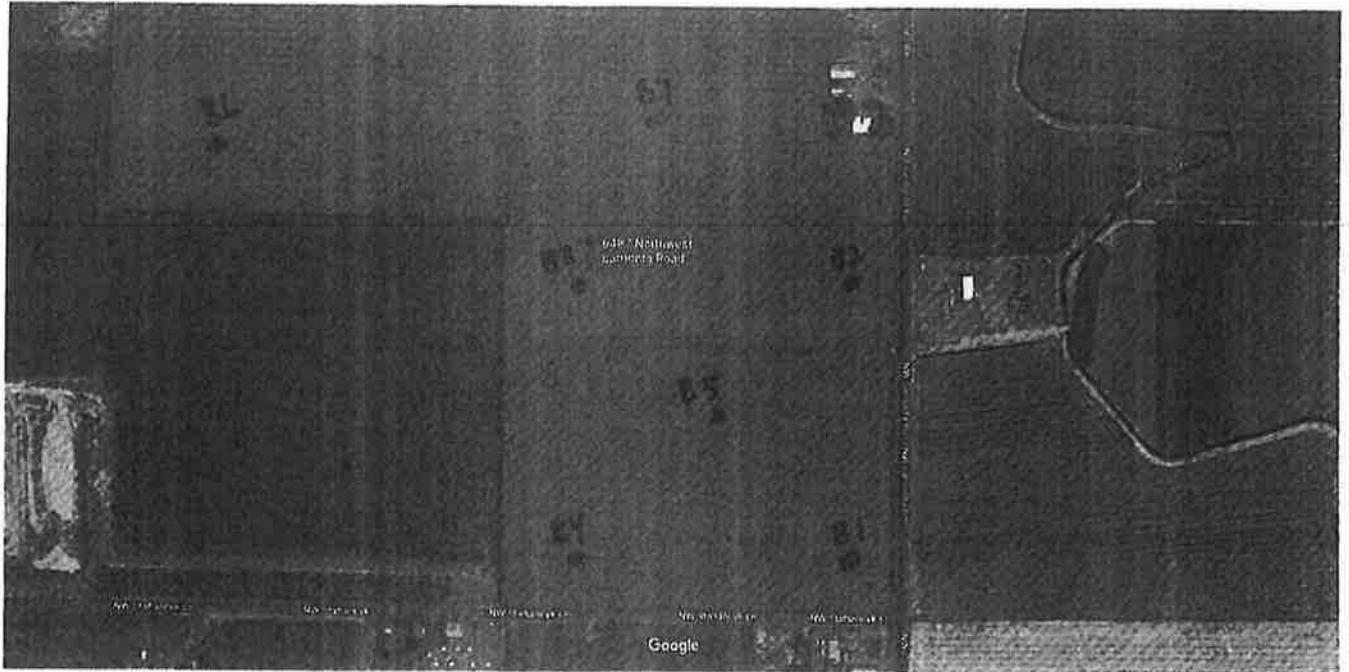
CROO 54799

8/20/2019

Map of Hole

Google Maps 6487 NW Lemonte Rd
Pineville OR

110-19-1059



STATE OF OREGON
GEOTECHNICAL HOLE REPORT
(as required by OAR 690-240-0035)

8/20/2019

(1) OWNER/PROJECT Hole Number B-6
PROJECT NAME/NBR: 110-19-1059
First Name ROBERT J (JR.) Last Name VANIER
Company
Address PO BOX 326
City DAYVILLE State OR Zip 97825

(2) TYPE OF WORK [X] New [] Deepening [X] Abandonment
[] Alteration (repair/recondition)

(3) CONSTRUCTION
[] Rotary Air [] Hand Auger [] Hollow stem auger
[] Rotary Mud [] Cable [] Push Probe
[X] Other SONIC

(4) TYPE OF HOLE:
[] Uncased Temporary [] Cased Permanent
[] Uncased Permanent [] Slope Stability
[] Other

(5) USE OF HOLE
SOIL SAMPLES

(6) BORE HOLE CONSTRUCTION Special Standard [] (Attach copy)
Depth of Completed Hole 30.00 ft

Table with columns: Dia, From, To, Material, SEAL, Amt, lbs. Includes Bentonite Chips.

Backfill placed from 0 ft. to 2 ft. Material SOIL / GRAVEL
Filter pack from ft. to ft. Material Size

(7) CASING/SCREEN table with columns: Casing, Screen, Dia, From, To, Gauge, Stl, Plstc, Wld, Thrd.

(8) WELL TESTS
[] Pump [] Bailer [] Air [] Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration(hr)

Temperature 52 °F Lab analysis [] Yes By
Supervising Geologist/Engineer
Water quality concerns? [] Yes (describe below) TDS amount 110 ppm
From To Description Amount Units

(9) LOCATION OF HOLE (legal description)
County CROOK Twp 14.00 S N/S Range 15.00 E E/W WM
Sec 14 NW 1/4 of the SE 1/4 Tax Lot 00103
Tax Map Number Lot
Lat " or " DMS or DD
Long " or " DMS or DD
[] Street address of hole [] Nearest address
6487 NW LAMONTA ROAD, PRINEVILLE, OR 97754

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Predeepening
Completed Well 6/13/2019 18
Flowing Artesian? []
WATER BEARING ZONES Depth water was first found 18.00
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(11) SUBSURFACE LOG
Material From To
Silt 0 5
Silty sand and gravel 5 17
Silt 17 30
Date Started 6/13/2019 Completed 6/13/2019

(12) ABANDONMENT LOG:
Material From To Amt lbs
Other 0 2 2 S
Bentonite Chips 2 30 8 S
Date Started 6/13/2019 Completed 6/13/2019

Professional Certification (to be signed by an Oregon licensed water or monitoring well constructor, Oregon registered geologist or professional engineer).
I accept responsibility for the construction, deepening, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.
License/Registration Number 10637 Date 8/20/2019
First Name ZANE Last Name SHADRICK
Affiliation ZANESHADRICK

GEOTECHNICAL HOLE REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

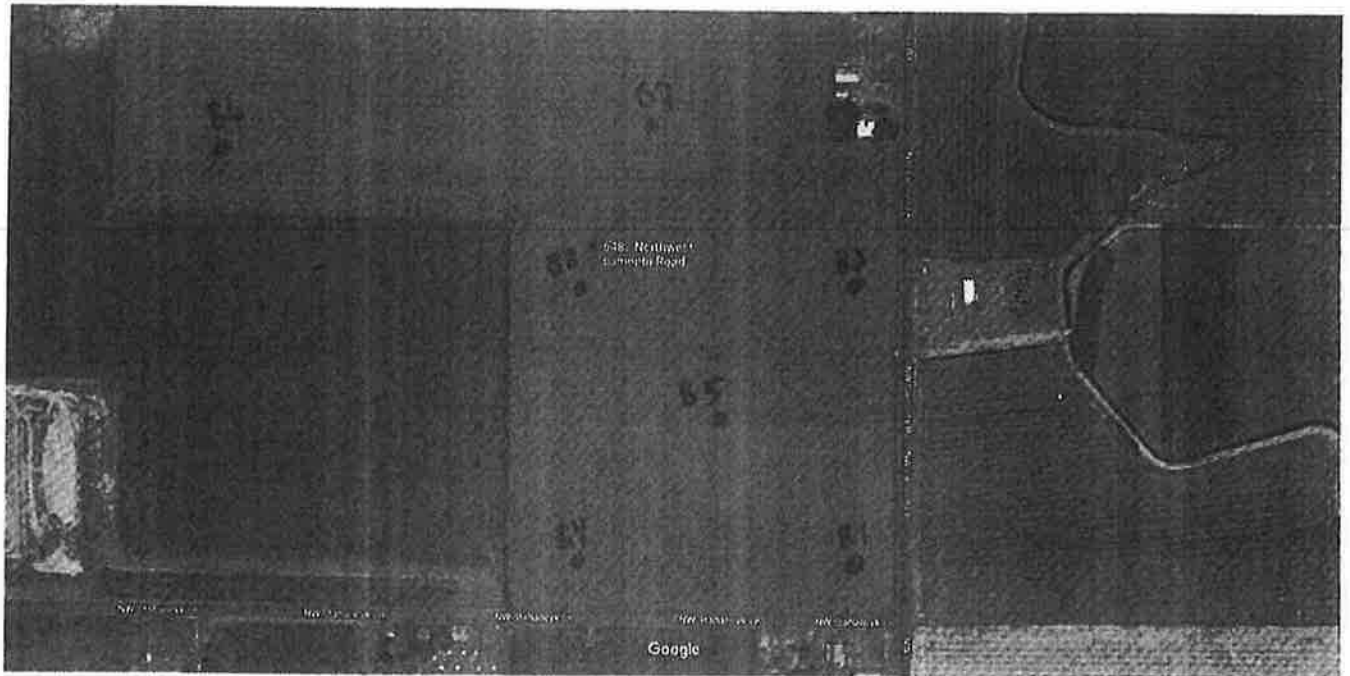
CROO 54800

8/20/2019

Map of Hole

Google Maps 6487 NW Lamonta Rd
Prineville OR

110-19-1059



STATE OF OREGON
GEOTECHNICAL HOLE REPORT
(as required by OAR 690-240-0035)

8/20/2019

(1) OWNER/PROJECT Hole Number B-7
PROJECT NAME/NBR: 110-19-1059
First Name ROBERT J (JR.) Last Name VANIER
Company
Address PO BOX 326
City DAYVILLE State OR Zip 97825

(2) TYPE OF WORK [X] New [] Deepening [X] Abandonment
[] Alteration (repair/recondition)

(3) CONSTRUCTION
[] Rotary Air [] Hand Auger [] Hollow stem auger
[] Rotary Mud [] Cable [] Push Probe
[X] Other SONIC

(4) TYPE OF HOLE:
[] Uncased Temporary [] Cased Permanent
[] Uncased Permanent [] Slope Stability
[] Other
Other:

(5) USE OF HOLE
SOIL SAMPLES

(6) BORE HOLE CONSTRUCTION Special Standard [] (Attach copy)
Depth of Completed Hole 30.00 ft
BORE HOLE
Dia From To Material SEAL From To Amt sacks/lbs
6 0 30 Other 0 2 2 S
Bentonite Chips 2 30 8 S

Backfill placed from 0 ft to 2 ft Material SOIL / GRAVEL
Filter pack from ft to ft Material Size

(7) CASING/SCREEN
Casing Screen Dia + From To Gauge Stl Plstc Wld Thrd

(8) WELL TESTS
[] Pump [] Bailer [] Air [] Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration(hr)

Temperature 52 °F Lab analysis [] Yes By
Supervising Geologist/Engineer
Water quality concerns? [] Yes (describe below) TDS amount 110 ppm
From To Description Amount Units

(9) LOCATION OF HOLE (legal description)
County crook Twp 14.00 S N/S Range 15.00 E E/W WM
Sec 14 NE 1/4 of the SE 1/4 Tax Lot 00103
Tax Map Number Lot
Lat " " " or " " " " DMS or DD
Long " " " or " " " " DMS or DD
[] Street address of hole [] Nearest address
6487 NW LAMONTA ROAD, PRINEVILLE, OR 97754

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Predeepening
Completed Well 6/13/2019 18
Flowing Artesian? []
WATER BEARING ZONES Depth water was first found 18.00
SWL Date From To Est Flow SWL(psi) + SWL(ft)
6/13/2019 18 30 18

(11) SUBSURFACE LOG Ground Elevation
Material From To
Sandy Silt 0 10
Sand and gravel 10 23
Silt 23 30
Date Started 6/13/2019 Completed 6/13/2019

(12) ABANDONMENT LOG:
Material From To Amt lbs
Other 0 2 2 S
Bentonite Chips 2 30 8 S
Date Started 6/13/2019 Completed 6/13/2019

Professional Certification (to be signed by an Oregon licensed water or monitoring well constructor, Oregon registered geologist or professional engineer).
I accept responsibility for the construction, deepening, alteration, or abandonment work performed during the construction dates reported above. All work performed during this time is in compliance with Oregon geotechnical hole construction standards. This report is true to the best of my knowledge and belief.
License/Registration Number 10637 Date 8/20/2019
First Name ZANE Last Name SHADRICK
Affiliation ZANESHADRICK

GEOTECHNICAL HOLE REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

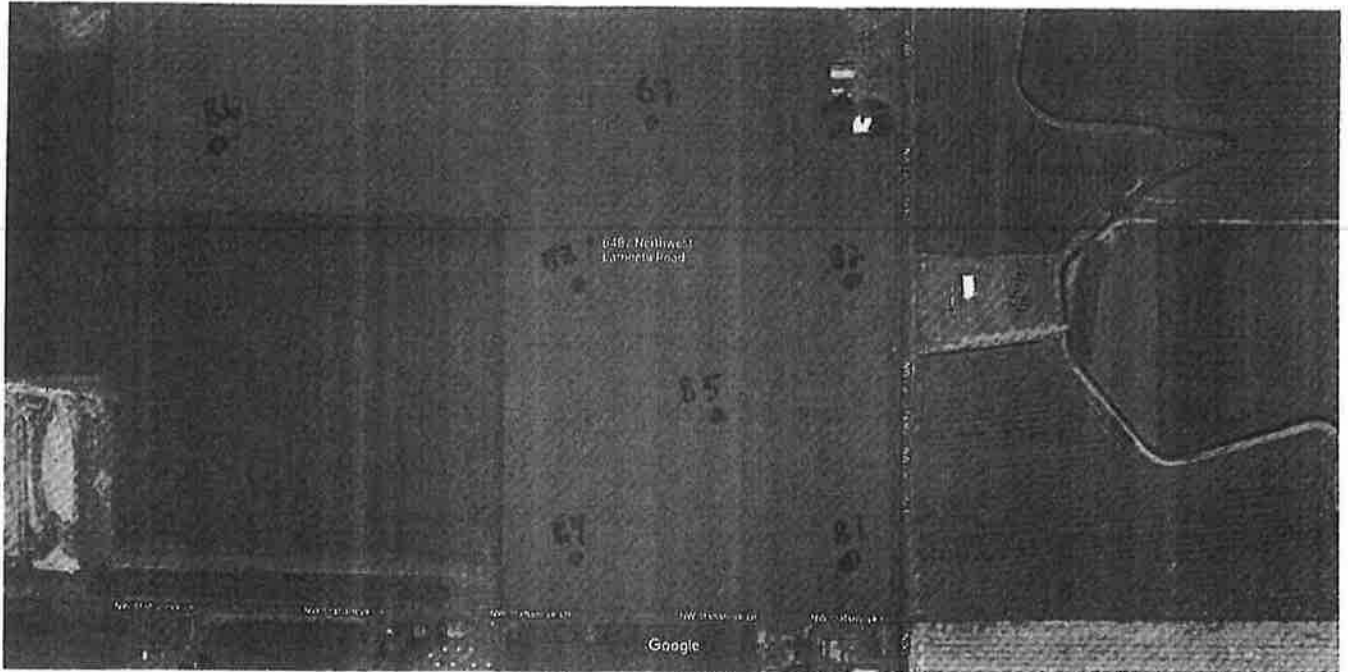
CROO 54801

8/20/2019

Map of Hole

Google Maps 6487 NW Lamonta Rd
Whiteville DR

110-19-1059





CROOK COUNTY RESIDENTS FEAR MINING COMPANY POLLUTED THEIR WATER. HERE'S HOW OREGON INVESTIGATED

June 13, 2023

FEDERAL LAWMAKERS ARE PUSHING BACK ON THE WAY A STATE AGENCY HANDLED COMPLAINTS ABOUT A MINING GIANT.

Tuesday, June 13, 2023

By: Emily Cureton Cook

OPB (<https://www.opb.org/article/2023/06/13/oreogn-water-pollution-knife-river-corporation-crook-county/>)

Don Porfily first noticed the change in his tap water last March. Out of nowhere, it tasted bad, "like mud," said the 84-year-old feed store owner.

He stopped drinking it. Then, the plumbing in his Central Oregon farmhouse went haywire. Spigots lost pressure. The washing machine broke and so did the fridge and the water heater. When Porfily lifted the lid of a toilet tank, he found a layer of thick black sludge.

 **English**

He's lived in the house for 26 years and has never seen anything like this.

His neighbors also grappled with mysterious calamities. Down the road at Ashley McCormick's house, they went through three dishwashers in a year. At Billie Johnson's dairy, a record number of calves had been born dead. Same story at Bryan Zednik's place.

Now, at least a dozen residents in this agricultural valley near Prineville are worried about the safety of their only drinking water supply, which is pumped from the ground.

"A neighbor will tell a neighbor, and they'll call and say, 'You better come look: black in the toilet, taste in the water,'" Porfily said.

He and others lay blame on a multi-billion-dollar construction materials company.

In 2016, Knife River Corporation leased 100 acres in the valley and started digging for rocks.

The company denies its sand and gravel pit is hurting the groundwater. It's a titan in developing the West, with tens of millions in state contracts to build roads and bridges. Near McCormick and Byrd's houses, it harvests materials used to make concrete. Knife River is nearly finished at the site but has plans to open a new mine nearby.

Neighbors are galvanized against this. Some say they've already witnessed broken promises from the company, all while state regulators have balked at groundwater complaints and ignored possible permit violations.

Neighbors feel the lack of oversight has effectively shifted the burden of proof from a huge corporation to a gaggle of local residents, a troubling dynamic that is now getting the attention of federal lawmakers.

A giant washing machine

People living near the mining operation, known as the Woodward pit, launched their own investigation last fall.

Porfily and others paid to have tap water samples analyzed at a lab. Results from a dozen homes near the mine show varying levels of manganese.

Depending on the concentration, this metal can cause a range of problems, from stained laundry to liver issues and neurological dysfunction.

In some wells, like Porfily's and McCormick's, the manganese levels were well above federal health advisory limits.

Knife River and state officials have said the element was there all along, a common geologic side effect of the volcanic eruptions that shaped the region. But residents and their advocates argue mining released previously undisturbed contaminants.

On a recent site tour, a leader from Knife River compared its operation to a giant washing machine.

"We mine material from the field, and then we introduce it into this wash plant," said South Central Division Vice President Chris Doan.

The wash plant scours dirt from the rocks so they can be sorted and shipped out to the company's concrete mix plants, Doan explained.

"It goes into home foundations, slabs for buildings," he said, "It goes into building roads and highways."

The wastewater from the mining process ends up in a series of settling ponds. From there it evaporates, infiltrates back into the ground, or gets pumped back through the washing machine.

The Woodward pit is one of the company's 51 mining permits in Oregon. Over the last decade, the company has been awarded nearly \$57 million in state contracts, mostly through the Oregon Department of Transportation. Its footprint spans 14 states in all, with a reported \$2.2 billion in annual revenue.



'A mine in the middle'

Oregon regulators are now considering whether Knife River can expand in Crook County, population of 26,000.

If it's permitted, the new pit would share ground with a determined opponent.

Dick Zimmerlee is a farmer who leases land inside the expansion area. He can see the existing mine from his house, and for the last two years has spent a lot of time and money trying to stop it from growing.

"It just chapped my backside that the Goliath could get away with running over everybody else," Zimmerlee said.

At first, he was worried about the amount of water the company was allowed to take to run its rock washing machine.

"Now, that's really the least of our problems," Zimmerlee said.

He believes the land Knife River has already mined isn't fertile for farming anymore, even though the company said it replaces any topsoil it removes. He accuses the company of digging deeper than its permit allows and burying things that disrupt the flow of water underground. Zimmerlee contends this caused drainage problems in his fields. He began to file numerous complaints with state regulators in 2021. Knife River has denied his allegations. In 2022, Zimmerlee too, found a black toilet tank.

He hired a hydrogeologist to assess the situation.

Jim Newton runs an engineering consulting firm out of Bend. He said until this site he's always worked for mining companies, not opposing them.

"I've never worked for NIMBYs, to put it bluntly," Newton said.

This year, he drove to find 30 domestic wells in the immediate area of the Woodward pit, noting their GPS coordinates. He reviewed about a dozen available water test results. Then, Newton laid the data out on a map. He found a pattern in which homes have higher manganese concentrations.

"What's different from one side of the map to the other side of the map? There's a mine in the middle," he said.

Newton theorizes that miners removed the earth's filtration system: the sand and gravel beneath the topsoil. Pre-mining, anything on the surface would have to percolate through that natural filter. If you take out those layers, Newton said, the groundwater becomes more vulnerable.

"All of a sudden that layer above the aquifer is very thin and more permeable, you don't have that advantage of additional material to filter out things like fertilizers, or really anything that hits the surface of the ground," according to Newton.

State permits limited the mining depth at the Woodward pit to 20 feet below the surface, and according to Knife River's planning documents, groundwater flooded the pit well above that, in some places at just 7 feet below ground. At its proposed expansion, the company expects to hit even more water.

Digging in the water table agitated manganese that had long been suspended as a solid in the ground, Newton said. The mining allowed it to dissolve in the aquifer. Picture dropping a lump of sugar into a glass of water, he said.

"You can see the crystals. There they are. Then, you give it a good stir and they're gone. You can still taste the difference."

Debate over manganese risks

Manganese is one of the most abundant elements on Earth, and an essential nutrient in food. But, too much of it can be toxic.

In 2011 (<https://pubmed.ncbi.nlm.nih.gov/20855239/>) and 2014,

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4256698/#:~:text=Conclusion,%E2%8C%99Exposure%20to%20mangane>) found exposure to manganese in drinking water was associated with poorer memory, attention and motor skills in

children. In **2020**

(<https://ehp.niehs.nih.gov/doi/full/10.1289/EHP6391#:~:text=We%20found%20that%20exposure%20to,but%20not%20C>) researchers drew a link between exposure during childhood and attention-deficit hyperactivity disorder.

The studies documented neurobehavioral differences when manganese concentrations ranged from 120 micrograms per liter to more than 400 micrograms per liter.

Ten of the 13 wells residents had tested near the mine were at or above that threshold. All of them were above concentrations known to give water a bad taste and leave stains.

Despite the growing concern over manganese, federal clean water laws don't apply to it. In decades-old guidelines, the U.S. Environmental Protection Agency advises that at 50 micrograms per liter, manganese can cause aesthetic problems that could stop people from using it. The EPA says manganese is a health concern at or above 300 micrograms per liter.

Three of the 13 Crook County wells exceeded that benchmark.

Other countries and public health organizations have recently adopted much stricter health standards.

In 2019, Canada lowered its maximum acceptable concentration to 120 micrograms per liter. The World Health Organization is considering lowering its health-based guideline to just 80 micrograms per liter.

Oregon follows the EPA's 2004 guidelines. Oregon Health Authority public health toxicologist Dave Farrer said in an email exchange that other countries have added "very large safety buffers," based on studies that exposed animals to exponentially higher concentrations than any of the regulatory health limits for people.

Anyone who isn't an infant could safely drink water with up to 1,000 micrograms per liter for up to a year, Farrer said. Above that level, "It would be best for no one to drink it even for a day."

'Not a home'

Don Porfily said he drank from his kitchen tap for 25 years, until last fall.

The water recently contained 1,120 micrograms of manganese per liter, nearly four times the EPA's health advisory level. That's according to lab testing of a May sample collected by OPB, which also revealed arsenic above the federal maximum contamination limit.

In a sample from Porfily last year, a different lab found lower levels of manganese, at nearly 500 micrograms per liter. By then, he had already stopped using the water for anything except flushing the toilet. He said the sprinklers don't run anymore because the pipes are so clogged.

"I haven't got any water to speak of in the house," he said. "It's not a home."


When his neighbor Ashley McCormick first sent her own tap water sample to a lab, it found 400 micrograms per liter of manganese. She's since spent thousands on a new well pump and a filtration system to make the water more usable for her family of five.

The costly system is online, but the smell and discoloration remain. Subsequent testing paid for by OPB showed tap water manganese concentrations still above the federal aesthetic contamination level, at 160 micrograms per liter.

Her family doesn't drink it anymore. She even stopped bathing her three kids in it. The water leaves stains, she said, and recently one of her boys came down with severe hives that doctors couldn't explain.

Experts say manganese isn't readily absorbed through the skin, but at this point, McCormick is freaked out.

"We just take super quick showers," she said.

She has considered selling. Though, as a real estate agent, she knows she'll have  English the water problems. It was once her dream home. Now, she wonders, "Who's going to want to buy it?"

Byran Zednik is also feeling done. He raises cattle in the valley. After having to cut a bloated, dead calf from its mother's womb piece by piece, killing both—he sent a blood sample from the mother to a lab. The blood showed manganese levels outside the normal range, according to a text from his veterinarian that Zednik shared. He wants to get out of the meat business and focus on raising crops.

"We're selling our cows because we're not going to pass that into the meat," he said.

Reluctant regulators

The problem for homeowners around the Woodward pit mining site is that there is no data on manganese levels before the mine opened. Real estate transactions in Oregon don't require such tests, and without that information, it's difficult to say if all the broken appliances, dead cattle and hives are attributable to Knife River.

State regulators have relied on this lack of data to dismiss complaints against the mining company, too. To independently assess the complaints, OPB reviewed hundreds of public records detailing the state response and spoke to key officials, geologists, Knife River representatives, eight residents living near the mine, and an independent expert on manganese.

Private wells in Oregon are not regulated. It's a homeowner's responsibility to know what's in their drinking water, said Oregon Department of Environmental Quality spokesperson Laura Gleim.

Still, per DEQ rules, mining sites are not allowed to degrade groundwater. The agency can bring enforcement actions against polluters. Since 2015, DEQ has issued more than \$330,000 in penalties against Knife River and one of its subsidiaries for water quality violations, including a \$20,822 fine last year related to the Woodward pit.

But when it comes to investigating complaints about water pollution by mining operations, DEQ passes responsibility to a different state agency, one that has much closer ties to the mining industry.

The Oregon Department of Geology and Mineral Industries employed geologist Bob Houston for more than 20 years before he became an environmental manager for Knife River in November 2021.

The hire wasn't unusual, Houston said.

"When I was in the [DOGAMI] role, we did have some staff that retired and then went back to private consulting," he said. "There's a boundary there that our integrity and our professionalism won't cross."

This year, DOGAMI officially concluded that the Knife River's Woodward pit is not responsible for contaminating groundwater.

State records show DEQ staff didn't initially agree with DOGAMI's assessment.

"We lack critical evidence to prove/disprove contamination from the mining activities," DEQ Water Quality Permitting Manager Mike Hiatt wrote in a Jan. 25 email to a supervisor.

By then, key DOGAMI staff had already made up their minds. They'd been aware of various grievances about the mine for a year before allegations of groundwater contamination surfaced.

Since December 2021, neighbor Zimmerlee filed complaints on a variety of issues and repeatedly pressed DOGAMI for a site inspection, to no avail. Instead, the agency asked Knife River to respond.

DOGAMI shelved that complaint without drafting a formal response to Zimmerlee, according to records reviewed by OPB.

Feeling ignored and frustrated, Zimmerlee bypassed DOGAMI last October and went directly to DEQ with water quality concerns. But, the environmental agency kicked the complaint back to DOGAMI.

Its staff was immediately dismissive, their emails show. They did not want to investigate at all, saying Zimmerlee did not include enough new information or evidence that Knife River was to blame. They said the metals turning up in local water test results – manganese and in some cases aluminum — aren't associated with sand and gravel mining.

English

A history of complaints

Zimmerlee wasn't the only neighbor to contact state regulators about the Woodward pit.

Karen Mikulski lives across the street, and she wrote to officials in November 2021 to allege Knife River dumped "hundreds of truckloads of concrete and asphalt" into the mine as filler. Mikulski also said she saw a hose pumping water from a pit into a nearby stream.

Within days of receiving the account, DOGAMI staff virtually met with Knife River representatives.

At that online meeting, the company reportedly said a few neighbors were organizing to oppose the expansion, and "their objective is to portray [Knife River Corporation] as bad operators," according to notes DOGAMI staff took.

The company's environmental manager Jeff Steyaert admitted water from a pit had flowed to a creek, though only for a fraction of the time Mikulski said she witnessed it. The admission would lead to a \$20,822 DEQ fine.

Knife River also acknowledged burying concrete debris in the mined farmland, a possible violation of its permit.

In an interview this month, Knife River Northwest Technical Services Manager Matt Ropp initially denied the company had buried construction materials in the mine until confronted with DOGAMI records obtained through a public records request.

"I was not aware of that," Ropp said.

In a subsequent email, he confirmed that staff buried 8,000 cubic yards of concrete — roughly 31 million pounds — in the Woodward pit between June and August of 2019.

DOGAMI spokesperson Alex Lopez acknowledged that burying the debris was "clearly inconsistent" with Knife River's operating permit, but said any regulatory action would be DEQ's responsibility, not his agency's.

The agency's hydrogeologist Bob Brinkmann said that, generally, it's on mining operators to make sure they follow the rules.

"It's like you have a driver's license. You're supposed to know what the law is and not speed excessively," Brinkmann said.

Knife River responds

Knife River said it began quarterly monitoring of two residential wells near the Woodward pit before it opened in 2016. Those tests have shown the water is safe, according to Knife River, but neighbors and their experts say the wells aren't actually located in areas where groundwater would flow from the mining site.

Last year, the company hired a water quality consultant, Amber Hudspeth, to summarize its data in a memo to DOGAMI. Hudspeth found the monitored wells hadn't changed much in seven years.

She concluded that the manganese and aluminum turning up in other water tests was naturally occurring and the result of volcanic geology, or possibly related to historical land uses.

There has been gravel mining in this area before, and the Woodward pit is partially located on the site of a defunct lumber mill. Hudspeth also pointed to the presence of manganese in the city of Redmond's well water supply, 20 miles away.

DOGAMI geologist Brinkmann agreed with the company's conclusions. He said in an interview that the data show a pattern linking metals in groundwater to certain well depths.

Knife River geologist Bob Houston added another theory to the mix in a recent email to OPB. Houston said there are wells throughout Crooked River Basin with warm temperatures, according to DOGAMI data, and that geothermal activity could cause dissolved minerals to appear in water tests.



Knife River and state officials have also pointed out that Zimmerlee's house isn't in the path of the groundwater's flow, yet he reports manganese detections and a black toilet tank.

When Hudspeth tested Zimmerlee's water in 2022, she found much lower levels of manganese and aluminum than his own samples had shown. OPB's 2023 testing did not find concerning levels of either metal.

"I don't know that Knife River, as a private business, is the correct party to go beyond our operations in order to try to figure out why a person's toilet is stained," said Knife River's Matt Ropp.

He encouraged people with concerns to bring them directly to the company, instead of regulators.

"We do our best to try to manage our operations and, and to communicate with our neighbors in order to minimize impacts to them," Ropp said.

OPB asked Ropp if, as a way to restore goodwill with the neighbors opposing the expansion, the company would consider paying for residential water filtration systems without admitting fault.

Ropp said no: "I am not fond of the idea of buying people off."

The price of non-disclosure

Adam Mikulski came to Knife River with concerns about its Woodward pit before it opened in 2016.

State records suggest those negotiations led the company to pay for a new well at Mikulski's house, across the street from the pit. The driller initially listed Knife River as the owner of the well. The company's name was later crossed out of the paperwork and replaced with Mikulski's.

Knife River monitors that well now, and its data was used to support dismissing the recent groundwater complaints.

Mikulski won't discuss the deal, he said, because of a non-disclosure agreement.

That didn't stop his wife Karen from contacting DOGAMI in 2021 to report the company for illegal dumping, resulting in the DEQ penalty.

The agencies' response left Adam Mikulski feeling cynical.

"They just take [Knife River's] word for it and, and they don't come out and check," he said of the regulators.

DOGAMI has not sent an inspector to the site since June 2021, before the complaints began.

Mikulski said he regrets initially going directly to the company because there is no public record of his concerns, nor the promises made to smooth them over.


Lately, DOGAMI appears to be rethinking its conclusions.

On June 5, the geologist working for local residents, Jim Newton, got an email from the DOGAMI's Executive Director and State Geologist Ruarri J. Day-Stirrat. It asked Newton to come to a closed-door meeting in Portland at the end of June.

The purpose is to discuss the manganese in Crook County's water. Knife River and Hudspeth are also invited.

"There will be no other participants," Day-Stirrat wrote to Newton. "I expect a series of slides laying out your data, your hypotheses, and a discussion of solutions based on your hypotheses."

Meanwhile, two U.S. Senators want to shift the responsibility and expense of providing answers away from the local residents and their paid consultant.

On June 7, Democratic Sens. Ron Wyden and Jeff Merkley sent a letter to the EPA's top Administrator Michael Regan, saying they "have a particular concern about a mine in Oregon that is currently  **English** expansion," and calling on the agency to examine the groundwater allegations as soon as possible.

In an interview, Merkley, a former state lawmaker, questioned the thoroughness of DOGAMI's conclusions, and the state agency's objectivity in investigating the industry.

"I know from my time in the state legislature that DOGAMI is basically often an advocate for mining," Merkley said.

He wants the EPA to do an independent investigation of the Woodward pit operation and its proposed expansion.



 **English**

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 English